

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Mika Grundström

Serial No. 09/990,039

Art Unit: 2144

Filed: November 20, 2001

Examiner: Shaw, Andy Peling

For: **MULTICAST ADDRESS TO PACKET IDENTIFIER MAPPING FOR  
BROADCAST SYSTEMS**

Mail Stop: Appeal  
Commissioner for Patents  
Washington, D.C. 20231

**APPEAL BRIEF**

Dear Sir:

Appellants submit this brief, in triplicate, in support of its notice of appeal filed on June 30, 2006. The appeal is from the decision of the Examiner in an Office Action mailed March 3, 2006 ("Final Office Action"), which finally rejected all claims in the above-identified utility patent application, and further in view of the decision from a pre-appeal brief conference request for review, the response to which was mailed September 28, 2006. Enclosed herewith is the requisite fee under §1.17(c). The commissioner is authorized to charge any additional fees necessitated by this Brief to our deposit account no. 13-4500 (Order No. 4208-4028).

Based on the arguments presented herein, Appellants respectfully request that the Board of Patent Appeals and Interferences order that the Final Rejection of March 3, 2006, be withdrawn.

**I. REAL PARTY IN INTEREST**

The real party in interest of the patent application on appeal is its assignee, NOKIA CORPORATION ("Nokia"), a corporation of Finland. All right, title and interest to the above-identified patent application was assigned by the inventor, Mika Grundström, to Nokia in an assignment document dated February 10, 1999, which assignment was recorded in the Patent and Trademark Office on November 20, 2001 at Reel 012319, Frame 0405.

**II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to the Appellants, the Appellants' legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

**III. THE STATUS OF THE CLAIMS**

There are 112 claims pending in this application, numbered 1-112. Claims 1-112 stand rejected. The claims appealed are 1-112. A complete copy of the claims involved in the appeal (original claims 1-110 and claims 111-112 added during prosecution) is attached hereto.

**IV. STATUS OF AMENDMENTS**

None of the originally filed claims have been altered from their original form in this application. On November 30, 2001, new claims 111 and 112 were added by Amendment.

A request for reconsideration (without amendment) and a pre-appeal brief conference request for review were filed after the March 3, 2006, Final Office Action.

**V. SUMMARY OF THE INVENTION**

The present invention, as claimed, is directed to at least a system, method and article of manufacture for constructing a data packet having a header segment and payload segment. Each data packet includes, within the header segment, encoded data that correlates to multicast IP address information for the data packet. The encoded header data is further used as selection criteria allowing a receiving terminal to identify that the data packet should be received.

The claimed invention provides selection criteria for routing a data packet that relies only on the multicast IP address of the data packet being transmitted, and as a result, reduces the communication overhead involved in transmitting data packets by eliminating the requirement to provide and maintain cross-reference tables linking selection information for a data packet, such as process identifier data (PID), to the multicast IP address of the data packet.

The PID mapping may be implemented by using a direct subset of the multicast IP address, or some transformed version of the IP address. The mapping may take the place of a service information table, and may permit rapid selection in hardware with no additional loading to the protocol stack above that found in existing communication systems.

**VI. STATEMENT OF ISSUES ON APPEAL**

The issues on appeal include whether:

1. Claims 1-3, 5, 7-13, 15, 17-23, 25, 27-30, 32-40, 42-50, 52-60, 63-64, 66, 68-72, 74, 76-80, 82, 84-86, 88-93 95-100 and 102-107 are anticipated under 35 U.S.C. §102(a) by U.S. Patent No. 6,216,167 to Momirov (hereafter, "Momirov")

2. Claims 4, 6, 14, 16, 24, 26, 41, 51, 61, 65, 67, 73, 75, 81, 83, 94, 101 and 108-100 are obvious under 35 U.S.C. §103(a) as being unpatentable over Momirov in view of U.S. Patent No. 6,226,291 to Chauvel et al. (hereafter, "Chauvel")

3. Claims 31, 62 and 87 are obvious under 35 U.S.C. §103(a) as being unpatentable over Momirov in view of U.S. Patent No. 5,544,161 to Bigham et al. (hereafter, "Bigham").

## **VII. GROUPING OF CLAIMS**

With regard to the Examiner's rejection of claims 1-112 under both 35 U.S.C. §102, as anticipated by the cited reference and 35 U.S.C. §103, as obvious in view of the combined references, Appellants assert that the claims are to be considered separately and do not stand or fall together for the reasons more fully described in the Arguments presented below.

## **VIII. ARGUMENT**

Claims 1-3, 5, 7-13, 15, 17-23, 25, 27-30, 32-40, 42-50, 52-60, 63-64, 66, 68-72, 74, 76-80, 82, 84-86, 88-93 95-100 and 102-107 have been finally rejected by the Examiner as being anticipated by Momirov.

In order for a reference to anticipate a claimed invention, the reference must recite each and every limitation of the claimed invention. MPEP § 2131 recites in part:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)..."The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Appellants respectfully submit that the Examiner has not met his required burden in establishing that Momirov anticipates each and every limitation of the aforementioned rejected claims for at least the reasons set forth below.

**A. Independent claims 1, 11 and 21 are not anticipated by Momirov:**

Claim 1 is directed to a method for constructing a data packet having both a payload segment that carries data associated with a link layer (MAC) or network layer (IP) address and a header segment that has one or more fields, the method comprising (1) generating an address value based on the IP or MAC address; formatting the address value; and (2) populating the formatted address value into a field of the header that will be used as a selection criteria by a receiving terminal. Claims 11 and 21 include limitations that are similar to claim 1 as they are applied to claims for an article of manufacture and an apparatus, respectively.

The Examiner contends that claims 1, 11 and 21 are anticipated by Momirov. Appellants respectfully disagree. Momirov is a system for routing information to various output queues or "taps" within a network device (column 1, lines 11-16). A standard packet is

separated into “cells,” and each cell receives forwarding control information regarding a particular output tap in the networking device. This information is then used to reassemble a packet prior to forwarding to an I/O card for broadcast. Momirov utilizes cross reference tables in routing data. The abstract recites, “The data and the multicast group identifier are then transferred to a switching card which indexes into a first set of correlation data...”, and “the I/O cards identify a set of ports associated with the multicast group by indexing into a second set of correlation data...” The concept of “index” (e.g., address) to “data” correlation is understood by one of ordinary skill in the art as a cross reference table. This interpretation is also supported later in the abstract: “Correlation data, e.g., in the form of tables indexed by multicast group identifiers...” Further, Momirov states, “The egress path table 315 is typically used by the switching logic 310 during egress processing to determine upon which tap(s) a particular multicast cell is to be forwarded.” (column 5, line 6) These aspects are distinguishable from the claimed invention, as is discussed in detail with respect to dependent claims 111 and 112 below.

Appellants have clearly shown from the outset of prosecution, and consistently argued, that Momirov does not disclose each and every element of the claimed invention, which is supported by the fact that no amendments have made in the pending claims. The Examiner makes broad rejections based on “the object” of the invention. These rejections do not fulfill the Examiner’s requirement to clearly set forth how the relied upon reference anticipates each and every limitation in the claims. Claim 1 recites at least the “construction” of a data packet that includes both a header and a payload segment, wherein the header segment has an address value

created through a "generating" process based on the IP or MAC address. The generated address information in the header will be used as selection criteria by a "receiving terminal." As opposed to Momirov as previously described, claim 1 includes at least two major distinguishable aspects: construction and generation of header address information, and data packet selection at a receiving terminal using header information.

"Constructing a data packet," is distinguishable from forwarding a data packet as performed by the Momirov system. The data packets in Momirov are only "prepended and/or appended" (see, for example, col. 8, lines 31-34). As best understood, the Momirov system places a new header in front or behind the packet, containing the routing information. The original packet structure is untouched. Thus, the original IP address will still be included if the arriving packet was an IP packet. In at least one embodiment of the present invention as claimed, such a header field are constructed, modified, determined and/or compiled into a single header (e.g., specification 0038-0040), which is distinguishable from the teaching in Momirov.

Momirov is further deficient in that it deals with routing only within one device. The Momirov device has multiple output ports, and the system determines to which output ports the (multicast) data should be routed (see, for example, FIG. 1, reference items 105-108). The evaluation of the "multicast identifier" is done completely within the same device. In at least one embodiment of the present invention as claimed, the task is independent of the number of output ports, and the new "address value" is evaluated in a different device (e.g., a receiving terminal as recited in claim 1), which is separate from the device which generates the address value.

In view of the above, at least claims 1, 11 and 21 are patently distinguishable over the cited reference. Dependent claims 2-10, 12-20 and 21-31 are also distinguishable at least in view of their dependence on claims 1, 11 and 21, respectively.

**B. Dependent claims 8 and 9 are not anticipated by Momirov.**

Further, it is not apparent how other limitations in the claims, for example dependent claims 8 and 9, are allegedly anticipated by Momirov. There is no recitation or implication in Momirov that the IP or MAC address, or a subset thereof, has been operated upon by a bitwise logic function or a hashing function. The Examiner relies upon Momirov column 10, line 27-column 11, line 8, which merely discusses different formats for a packet address, and column 2, lines 14-55, which is a generalized summary of the invention, neither of which recite or imply the use of hashing with respect to the present invention.

Therefore, claims 8 and 9 are also patently distinguishable over the cited reference in view of the further rationale set forth above.

**C. Dependent claims 111 and 112 are not anticipated by Momirov.**

Appellants have continued to argue throughout all their responses that typical multicast systems may experience delays in delivering information to a client terminal caused by the need for client device to access various cross-reference tables in order to determine the appropriate selection criteria for data packets corresponding to information desired by a receiving terminal. As previously discussed in the general overview of the Momirov reference, the present invention causes additional IP, MAC and other protocol related information to be included in the



packet header so that the receiving terminal may use the header as a selection criteria without having to access cross reference tables, thereby reducing network overhead. Appellants attempted to further distinguish the claimed invention by including at least these elements in new claims 111 and 112 added in the November 30, 2005, response. Appellants added these new claims with the hope of generating allowable subject matter with which to expedite prosecution.

The rejection in the March 3, 2006, Final Office Action grouped new claims 111 and 112 with the other claims that the Examiner considered to be within the same scope as previously pending claims 1-3, 5 and 7-10 without any further explanation (March 3, 2006, Office Action, page 5, section 3i). The Examiner did not respond to Appellants explicit statement supporting the novelty of new claims 111 and 112, and has not provided an adequate grounds of rejection to claims that Appellants believe to include limitations distinct from both the previously presented claims and the previously cited references. The Examiner has attempted to justify the previous rejection in the June 14, 2006, Advisory Action by stating that these claims, which Appellants believe have unique limitations not found in any other claim (selection criteria is based only on the formatted address value, and that selection criteria is established without the use of tables) were within the scope of the other claims based on the disclosure. Appellants do not understand how these claims can be within the scope of other claims already in the disclosure when the limitations recited in claims 111 and 112 are found only in these claims.

As a result, Appellants are confused about the Examiner's argument regarding the scope of claims 111 and 112, and believe that these claims have not been adequately considered.

**D. Independent claims 63, 71 and 79 are not anticipated by Momirov.**

The Examiner groups claims 63, 71 and 79 which, according to the Examiner, “are of the same scope as claims 1-3, 7 and 7-10.” As a result, the Examiner rejected these claims without any additional explanation as to how they are anticipated by Momirov.

Appellants respectfully disagree. Independent claims 63, 71 and 79 are directed to constructing a multicast data packet, said packet having both a payload segment that carries data associated with an IP or MAC address and a header segment that has one or more fields, the method comprising (1) generating an address value based on the IP or MAC address for the payload, (2) generating a status value to identify the packet as part of a multicast data stream; and populating the address value and the status value into a field of the header that will be used as selection criteria by receiving terminals. Claims 71 and 79 include limitations that are similar to claim 63 as they are applied to claims for an article of manufacture and an apparatus, respectively. The claim limitation, “(2) generating a status value to identify the packet as part of a multicast data stream,” is not recited in any of claims 1, 11 and 21, which narrows the scope of these claims.

As a result, claims 63, 71 and 79 do not have a scope identical to claims 1, 11 and 21, and therefore, have not been appropriately considered by the Examiner. Appellants further assert claims 63, 71 and 79 are not anticipated in view of the previously forth comments with respect to claims 1, 11 and 21 in combination with the additional limitation as noted above.

Claims 64-70, 72-78 and 80-87 are also distinguishable at least in view of their dependence on claims 63, 71 and 79, respectively.

**E. Independent claims 32, 42 and 52 are not anticipated by Momirov.**

The Examiner has rejected claims 32, 42 and 52 as anticipated by Momirov. Appellants respectfully disagree with the Examiner's assertion, and believe that the Examiner has failed to establish that each and every limitation of these claims is anticipated. Claims 32, 42 and 52 are directed to selecting a desired data packet from a plurality of data packets, where each packet is associated with an IP or MAC address, the method comprising: (1) generating an expected value for a field in the header based on the IP or MAC address, where said field is used as selection criteria; and (2) examining the field used as selection criteria in each packet of a plurality of incoming packets so as to identify packets that contain the expected value. Claims 42 and 52 include limitations that are similar to claim 32 as they are applied to claims for an article of manufacture and an apparatus, respectively.

Paragraphs 0039 and 0050-0052 of the specification disclose an exemplary data packet and corresponding generation process, wherein a totally new address header is generated. Appellants argue that "generating," as recited in claims 32, 42 and 52, is at least a calculation or computation that amounts to data manipulation more substantial than looking up information in a cross-reference table. This process is distinct from Momirov, wherein cross-reference tables are used (e.g., FIG. 5, 6 and column 8, line 66-column 9 line 31). As relied upon by the Examiner, the Momirov reference recites the use of cross reference tables to append new information to

existing packet headers, the new information being employed to determine whether a data packet is a multicast packet, and how it should be routed to queues within the same device.

In view of the above, at least claims 32, 42 and 52 are patently distinguishable over the cited reference. Claims 33-41, 43-51 and 53-62 are also distinguishable at least in view of their dependence on claims 32, 42 and 52, respectively.

**F. Independent claims 88, 95 and 102 are not anticipated by Momirov.**

The Examiner groups claims 88, 95 and 102 which, according to the Examiner, are of the same scope as claims 32, 42 and 52. As a result, the Examiner rejected these claims without any additional explanation as to how they are anticipated by Momirov.

Appellants respectfully disagree. Independent claims 88, 95 and 102 are directed to selecting a multicast desired data packet from a plurality of data packets, where each packet is associated with an IP or MAC address and possesses a field used as selection criteria, the method comprising: (1) generating an address value based on the IP or MAC address for the payload of the desired packet; (2) generating a status value to represent that the packet is part of a multicast data stream; examining the field used as selection criteria in incoming packets for packets that contain the expected arrangement of the address value and the status value. Claims 95 and 102 include limitations that are similar to method claim 88 as they are applied to claims for an article of manufacture and an apparatus, respectively. The limitation, “(2) generating a status value to identify the packet as part of a multicast data stream,” is not recited in any of claims 88, 95 and 102, which narrows the scope of these claims.

As a result, claims 88, 95 and 102 do not have a scope identical to claims 32, 42 and 52, and therefore, have not been appropriately considered by the Examiner. Appellants further assert claims 88, 95 and 102 are not anticipated in view of the previously forth comments with respect to claims 32, 42 and 52 in combination with the additional limitation as noted above. Claims 89-94, 96-101 and 103-108 are also distinguishable at least in view of their dependence on claims 88, 95 and 102, respectively.

**G. Independent claims 109 and 110 are not obvious in view of the combined Momirov and Chauvel References.**

Claims 4, 6, 14, 16, 24, 26, 41, 51, 61, 65, 67, 73, 75, 81, 83, 94, 101 and 108-110 are rejected under Momirov, as applied to claims 1-3 and 5 above, and in further view of Chauvel.

To establish a prima facie case of obviousness, the Examiner must satisfy all three of the following criteria:

- (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
- (2) there must be a reasonable expectation of success; and
- (3) the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

See MPEP 706.02(j).

Appellants respectfully submit that the Examiner has not met his burden in establishing a prima facie case of obviousness with respect to at least independent claims 109 and 110 for the reasons set forth below.

Appellants respectfully contend that all of the obviousness rejections in the prior Office Action lack adequate motivation as required under U.S. patent law. The motivation offered in these rejections does not rely upon independent support (e.g., a citation in the secondary reference, an outside resource, etc.), and seems to instead mirror the benefits recited by the present invention. Therefore, this motivation is deemed to constitute impermissible hindsight reconstruction by the Examiner (e.g., the Examiner combined the references only because of the teaching of the present invention), and therefore, Appellants believe the rejections to be invalid.

In addition, The Examiner relies upon the combined teaching of Momirov and Chauvel in order to reject independent claims 109 and 110. Chauvel is a digital packet parser system usable, for example, as a decoder for digital television. The system may route packets depending on a flag that indicates various conditions (e.g. errors, more processing required, etc.). The Examiner only relies upon the Chauvel reference to teach the processing and routing of MPEG2 information. Chauvel does not cure any of the deficiencies described above in respect to the Momirov reference alone, and therefore, in addition to lacking an adequate motivation to combine the two references, the rejection is also invalid for at least the reasons discussed above in regard to the 35 U.S.C. § 102 rejection.

Therefore, claims 109 and 110 are patently distinguishable over the cited reference in view of the further rationale set forth above.

**H. Dependent claims 31, 62 and 87 are not obvious in view of the combined**

**Momirov and Bigham References.**

Claims 31, 62 and 87 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Momirov, as applied to claims 1-2 and 32 above, and further in view of Bigham.

The Examiner relies upon the combined teachings of Momirov and Bigham in order to reject claims 31, 62 and 87. Appellants respectfully disagree. Bigham is a digital distribution system that consolidates a plurality of signals received via asynchronous transport mode (ATM), and then transmits these consolidated signals for local distribution over a hybrid-fiber-coax local loop. The section relied upon by the Examiner (column 32, lines 8-21) discloses how a digital entertainment terminal (DET) may communicate wirelessly via IR communication with a receiving device, such as a personal digital assistant. However, claim 31 requires that the device of claim 21 be a wireless handheld terminal, wherein the device of claim 21 is performing the method of claim 1. In Bigham, the DET is the device actually handling the processing and routing of data, and according to column 29, line 61 to column 30, line 6, this device is a connected via a coaxial cable drop (hardwired) to the network. Therefore, in addition to the rejection lacking an adequate motivation to combine the two references and being invalid for at least the reasons discussed above in regard to the 35 U.S.C. § 102 rejection, the rejection is also

invalid because the wireless communication device in Bigham is merely a receiving device, and is not employed to process and route data as required by claims 31, 62 and 87 of the present invention.

In view of the previous remarks, Appellants believe that claims 31, 62 and 87 are not obvious in view of the cited references, and therefore, are in condition for allowance.

### **CONCLUSION**

In view of the foregoing, the Examiner has not set forth adequate grounds in order to reject each of the claims 1-112, and Appellants believe that all pending claims are allowable. Appellants therefore request that the Examiner's rejection be reversed, the Final Office Action be withdrawn and all claims be allowed.



**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 1963-7299. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. 13-4500, Order No. 4208-4028. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

Respectfully submitted,  
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Dated: October 27, 2006

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**APPENDIX OF CLAIMS INVOLVED IN THIS APPEAL**

1. A method for constructing a data packet having both a payload segment that carries data associated with a link layer (MAC) or network layer (IP) address and a header segment that has one or more fields, the method comprising:
  - generating an address value based on the IP or MAC address;
  - formatting the address value; and
  - populating the formatted address value into a field of the header that will be used as a selection criteria by a receiving terminal.
2. The method according to claim 1 wherein the data packet is a multicast or unicast packet.
3. The method according to claim 1 wherein the IP or MAC address is a multicast or unicast address.
4. The method according to claim 3 wherein the packet is part of a Motion Picture Expert Group – level 2 (MPEG2) transport stream; the field that will be used as selection criteria comprises a one bit flag preceding the address value, the 12 least significant bits of the IP or MAC address of the payload.
5. The method according to claim 1 wherein the address value is formatted in accordance with a protocol.
6. The method according to claim 5 wherein the protocol is MPEG2.
7. The method according to claim 1 wherein the selection criteria comprises a subset of the IP or MAC address.
8. The method according to claim 1 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.

9. The method according to claim 1 wherein the IP or MAC address, or a subset thereof, has been operated upon by a hashing function.
10. The method according to claim 1 wherein the addition of a flag to indicate that the packet is part of a multicast data stream formats the address value.
11. An article of manufacture for constructing a data packet having both a payload segment that carries data associated with a link layer (MAC) or network layer (IP) address and a header segment that has one or more fields, the article of manufacture comprising:
  - a computer readable medium including instructions for:
    - generating an address value based on the IP or MAC address;
    - formatting the address value; and
    - populating the formatted address value into a field of the header that will be used as a selection criteria by a receiving terminal.
12. The article of manufacture according to claim 11 wherein the data packet is a multicast or unicast packet.
13. The article of manufacture according to claim 11 wherein the IP or MAC address is a multicast or unicast address.
14. The article of manufacture according to claim 13 wherein the packet is part of a Motion Picture Expert Group – level 2 (MPEG2) transport stream; the field that will be used as selection criteria comprises a one bit flag preceding the address value, the 12 least significant bits of the IP or MAC address of the payload.
15. The article of manufacture according to claim 11 wherein the address value is formatted in accordance with a protocol.
16. The article of manufacture according to claim 15 wherein the protocol is MPEG2.

17. The article of manufacture according to claim 11 wherein the selection criteria comprises a subset of the IP or MAC address.
18. The article of manufacture according to claim 11 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
19. The article of manufacture according to claim 11 wherein the IP or MAC address, or a subset thereof, has been operated upon by a hashing function.
20. The article of manufacture according to claim 11 wherein the addition of a flag to indicate that the packet is part of a multicast data stream formats the address value.
21. An apparatus for constructing a data packet having both a payload segment that carries data associated with an IP or MAC address and a header segment that has one or more fields, the apparatus comprising:
  - a memory device storing a program;
  - a processor in communication with said memory device;
  - said processor operative with said program to:
    - generate an address value based on the IP or MAC address;
    - format the address value; and
    - populate the formatted address value into a field of the header that will be used as a selection criteria by a receiving terminal.
22. The apparatus according to claim 21 wherein the data packet is a multicast or unicast data packet.
23. The apparatus according to claim 21 wherein the IP or MAC address is a multicast address.

24. The apparatus according to claim 23 wherein the packet is part of a Motion Picture Expert Group – level 2 (MPEG2) transport stream; the field that serves as selection criteria comprises a one bit flag preceding the address value, the 12 least significant bits of the IP or MAC address of the payload.
25. The apparatus according to claim 21 wherein the address value is formatted in accordance with a protocol.
26. The apparatus according to claim 25 wherein the protocol is MPEG2.
27. The apparatus according to claim 21 wherein the selection criteria comprises a subset of the IP or MAC address.
28. The apparatus according to claim 21 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
29. The apparatus according to claim 21 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a hashing function.
30. The apparatus according to claim 21 wherein the addition of a flag to indicate that the packet is part of a multicast data stream formats the address value.
31. The apparatus according to claim 21 wherein the apparatus is a wireless handheld terminal.
32. A method for selecting a desired data packet from a plurality of data packets, where each packet is associated with an IP or MAC address, the method comprising:

generating an expected value for a field in the header based on the IP or MAC address, where said field is used as selection criteria; and

examining the field used as selection criteria in each packet of a plurality of incoming packets so as to identify packets that contain the expected value.

33. The method according to claim 32 wherein the data packet is a multicast or unicast packet.
34. The method according to claim 32 wherein the IP or MAC address is a multicast or unicast address.
35. The method according to claim 32 wherein the IP or MAC address is determined from a table.
36. The method according to claim 32 wherein the anticipated address value is determined solely from the IP or MAC address of the desired data stream.
37. The method according to claim 32 wherein the selection criteria comprises a subset of the IP or MAC address.
38. The method according to claim 32 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
39. The method according to claim 32 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a hashing function.
40. The method according to claim 32 wherein a flag value indicates that the packet is part of a multicast data stream.
41. The method according to claim 32 wherein the packet is part of a Motion Picture Expert Group - level 2 (MPEG2) transport stream; the field that will be used as selection criteria is a one bit flag preceding the 12 least significant bits of the IP or MAC address of the payload.
42. An article of manufacture for selecting a desired data packet from a plurality of data packets, where each packet is associated with an IP or MAC address, the article of manufacture comprising:

a computer readable medium including instructions for:

generating an expected value for a field in the header based on the IP or MAC address, where said field is used as selection criteria; and

examining the field used as selection criteria in each packet of a plurality of incoming packets so as to identify packets that contain the expected value.

43. The article of manufacture according to claim 42 wherein the data packet is a multicast or unicast packet.
44. The article of manufacture according to claim 42 wherein the IP or MAC address is a multicast or unicast address.
45. The article of manufacture according to claim 42 wherein the IP or MAC address is determined from a table.
46. The article of manufacture according to claim 42 wherein the anticipated address value is determined solely from the IP or MAC address of the desired data stream.
47. The article of manufacture according to claim 42 wherein the selection criteria comprises a subset of the IP or MAC address.
48. The article of manufacture according to claim 42 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
49. The article of manufacture according to claim 42 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a hashing function.
50. The article of manufacture according to claim 42 wherein a flag value indicates that the packet is part of a multicast data stream.
51. The article of manufacture according to claim 42 wherein the packet is part of a Motion Picture Expert Group - level 2 (MPEG2) transport stream; the field that will be used as

selection criteria is a one bit flag preceding the 12 least significant bits of the IP or MAC address of the payload.

52. An apparatus for selecting a desired data packet from a plurality of data packets, where each packet is associated with an IP or MAC address, the apparatus comprising:
- a memory device storing a program;
  - a processor in communication with said memory device;
  - said processor operative with said program to:
    - generate an expected value for a field in the header based on the IP or MAC address, where said field is used as selection criteria; and
    - examine the field used as selection criteria of each packet in a plurality of incoming packets so as to identify packets that contain the expected value.
53. The apparatus according to claim 52 wherein the data packet is a multicast or unicast packet.
54. The apparatus according to claim 52 wherein the IP or MAC address is a multicast or unicast address.
55. The apparatus according to claim 52 wherein the IP or MAC address is determined from a table.
56. The apparatus according to claim 52 wherein the anticipated address value is determined solely from the IP or MAC address of the desired data stream.
57. The apparatus according to claim 52 wherein the selection criteria comprises a subset of the IP or MAC address.
58. The apparatus according to claim 52 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.



59. The apparatus according to claim 52 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a hashing function.
60. The apparatus according to claim 52 wherein a flag value indicates that the packet is part of a multicast data stream.
61. The apparatus according to claim 52 wherein the packet is part of a Motion Picture Expert Group - level 2 (MPEG2) transport stream; the field that is used as selection criteria is a one bit flag preceding the 12 least significant bits of the IP or MAC address of the payload.
62. The apparatus according to claim 52 wherein the apparatus is a wireless handheld terminal.
63. A method for constructing a multicast data packet, said packet having both a payload segment that carries data associated with an IP or MAC address and a header segment that has one or more fields, the method comprising:
- generating an address value based on the IP or MAC address for the payload;
  - generating a status value to identify the packet as part of a multicast data stream;
  - and
  - populating the address value and the status value into a field of the header that will be used as selection criteria by receiving terminals.
64. The method according to claim 63 wherein the IP or MAC address is a multicast address.
65. The method according to claim 63 wherein the packet is part of a Motion Picture Expert Group - level 2 (MPEG2) transport stream; the field that is used as selection criteria comprises a one bit flag preceding the address value, the 12 least significant bits of the IP or MAC address of the payload.

66. The method according to claim 63 wherein the address value is formatted in accordance with a protocol.
67. The method according to claim 66 wherein the protocol is MPEG2.
68. The method according to claim 63 wherein the selection criteria comprises a subset of the IP or MAC address.
69. The method according to claim 63 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
70. The method according to claim 63 wherein the IP or MAC address, or a subset thereof, has been operated upon by a hashing function.
71. An article of manufacture for constructing a multicast data packet, said packet having both a payload segment that carries data associated with an IP or MAC address and a header segment that has one or more fields, the article of manufacture comprising:
  - a computer readable medium including instructions for:
    - generating an address value based on the IP or MAC address for the payload;
    - generating a status value to identify the packet as part of a multicast data stream;
    - and
    - populating the address value and the status value into a field of the header that will be used as selection criteria by receiving terminals.
72. The article of manufacture according to claim 71 wherein the IP or MAC address is a multicast address.
73. The article of manufacture according to claim 71 wherein the packet is part of a Motion Picture Expert Group – level 2 (MPEG2) transport stream; the field that is used as

selection criteria comprises a one bit flag preceding the address value, the 12 least significant bits of the IP or MAC address of the payload.

74. The article of manufacture according to claim 71 wherein the address value is formatted in accordance with a protocol.
75. The article of manufacture according to claim 74 wherein the protocol is MPEG2.
76. The article of manufacture according to claim 71 wherein the selection criteria comprises a subset of the IP or MAC address.
77. The article of manufacture according to claim 71 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
78. The article of manufacture according to claim 71 wherein the IP or MAC address, or a subset thereof, has been operated upon by a hashing function.
79. An apparatus for constructing multicast data packets, said packet having both a payload segment that carries data associated with an IP or MAC address and a header segment that has one or more fields, including a field used as selection criteria by receiving terminals, the apparatus comprising:

a memory device storing a program;

a processor in communication with said memory device;

said processor operative with said program to:

generate an address value based on the IP or MAC address for the payload;

generate a status value to identify the packet as part of a multicast data stream;

and

populate the address value and the status value into a field of the header that will

be used as selection criteria by receiving terminals.

80. The apparatus according to claim 79 wherein the IP or MAC address is a multicast address.
81. The apparatus according to claim 79 wherein the packet is part of a Motion Picture Expert Group – level 2 (MPEG2) transport stream; the field that is used as selection criteria comprises a one bit flag preceding the address value, the 12 least significant bits of the IP or MAC address of the payload.
82. The apparatus according to claim 79 wherein the address value is formatted in accordance with a protocol.
83. The apparatus according to claim 79 wherein the protocol is MPEG2.
84. The apparatus according to claim 79 wherein the selection criteria comprises a subset of the IP or MAC address.
85. The apparatus according to claim 79 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
86. The apparatus according to claim 79 wherein the IP or MAC address, or a subset thereof, has been operated upon by a hashing function.
87. The apparatus according to claim 79 wherein the apparatus comprises a wireless handheld terminal.
88. A method for selecting a multicast desired data packet from a plurality of data packets, where each packet is associated with an IP or MAC address and possesses a field used as selection criteria, the method comprising:

generating an address value based on the IP or MAC address for the payload of the desired packet;

generating a status value to represent that the packet is part of a multicast data stream;

examining the field used as selection criteria in incoming packets for packets that contain the expected arrangement of the address value and the status value.

89. The method according to claim 88 wherein the IP or MAC address is determined from a table.
90. The method according to claim 88 wherein the anticipated address value is determined solely from the IP or MAC address of the desired data stream.
91. The method according to claim 88 wherein the selection criteria comprises a subset of the IP or MAC address.
92. The method according to claim 88 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
93. The method according to claim 88 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a hashing function.
94. The method according to claim 88 wherein the packet is part of a Motion Picture Expert Group - level 2 (MPEG2) transport stream; the field that serves as selection criteria is a one bit flag preceding the 12 least significant bits of the IP or MAC address of the payload.
95. An article of manufacture for selecting a multicast desired data packet from a plurality of data packets, where each packet is associated with an IP or MAC address and possesses a field used as selection criteria, the article of manufacture comprising:

a computer readable medium including instructions for:

generating an address value based on the IP or MAC address for the payload of the desired packet;

generating a status value to represent that the packet is part of a multicast data stream;

examining the field used as selection criteria in incoming packets for packets that contain the expected arrangement of the address value and the status value.

96. The article of manufacture according to claim 95 wherein the IP or MAC address is determined from a table.
97. The article of manufacture according to claim 95 wherein the anticipated address value is determined solely from the IP or MAC address of the desired data stream.
98. The article of manufacture according to claim 95 wherein the selection criteria comprises a subset of the IP or MAC address.
99. The article of manufacture according to claim 95 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
100. The article of manufacture according to claim 95 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a hashing function.
101. The article of manufacture according to claim 95 wherein the packet is part of a Motion Picture Expert Group - level 2 (MPEG2) transport stream; the field that serves as selection criteria is a one bit flag preceding the 12 least significant bits of the IP or MAC address of the payload.
102. An apparatus for selecting a desired multicast data packet from a plurality of data packets, where each packet is associated with an IP or MAC address and possesses a field used as selection criteria, the apparatus comprising:

a memory device storing a program;

a processor in communication with said memory device;

said processor operative with said program to:

generate an address value based on the IP or MAC address for the desired packet;

generate a status value to represent that the packet is part of a multicast data stream;

examine the field used as selection criteria in incoming packets for packets that contain the expected arrangement of the address value and the status value.

103. The apparatus according to claim 102 wherein the IP or MAC address is determined from a table.
104. The apparatus according to claim 102 wherein the anticipated address value is determined solely from the IP or MAC address of the desired data stream.
105. The apparatus according to claim 102 wherein the selection criteria comprises a subset of the IP or MAC address.
106. The apparatus according to claim 102 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a bitwise logic function.
107. The apparatus according to claim 102 wherein the selection criteria comprises a subset of the IP or MAC address that has been operated upon by a hashing function.
108. The apparatus according to claim 102 wherein the packet is part of a Motion Picture Expert Group - level 2 (MPEG2) transport stream; the field that serves as selection criteria is a one bit flag preceding the 12 least significant bits of the IP or MAC address of the payload.
109. A method for transmitting data on a distributed (internet-type) network utilizing MPEG2 packets, each packet known to contain a 13-bit field identified as a packet identification (PID) field, the network having one or more receiving entities and one or more transmitting entities, the method comprising:

populating the first bit of the PID field with a bit to indicate that the packet contains multicast data;

populating the remaining 12 bits of the PID with the 12 least significant bits of the IP or MAC address for the data the pack carries; and

constructing the remainder of the packet.

110. A method for selecting a desired data packet from a plurality of MPEG2 data packets, each packet known to contain a 13-bit field identified as a packet identification (PID) field, the selection to be based said field, the method comprising:

examining the PID at the network interface hardware

bringing into the protocol stack all packets that have a PID field characterized by:

a first bit flag indicating that it does not carry a multicast program; or

a first bit flag indicating that a multicast program is carried by the packet and the remainder of the PID contains the 12 least significant bits of the IP or MAC address for the data the desired packet will carry.

111. (Previously presented) The method according to claim 1 wherein the selection criteria is based only formatted address value.
112. (Previously presented) The method according to claim 1, wherein the selection criteria is established without the use of tables used to link the PID to the multicast IP address.